Matas (R.)
1893

NOTES ON SOME CONGENITAL ANOMALIES CONNECTED WITH THE BRANCHIAL APPARATUS.

BY

RUDOLPH MATAS, M.D.,

VISITING SURGEON CHARITY HOSPITAL, ETC., NEW ORLEANS, LA.

Presented by the author

500

LIBRARY

FROM

THE MEDICAL NEWS,

December 2, 1893.

[Reprinted from THE MEDICAL NEWS, December 2, 1893.]

NOTES ON SOME CONGENITAL ANOMALIES CONNECTED WITH THE BRANCHIAL APPARATUS.[1]

BY RUDOLPH MATAS, M.D.,
VISITING SURGEON CHARITY HOSPITAL, ETC., NEW ORLEANS, LA.

I. CONGENITAL INCOMPLETE EXTERNAL FISTULA OF THE NECK, IN THE LINE OF THE FOURTH PHARYNGEAL CLEFT.

ON May 31, 1892, a female infant, two weeks old, was brought to my office, upon the recommendation of the midwife who had delivered the mother, for the purpose of explaining the nature of a peculiar mark on the neck that had been noticed immediately after the birth of the infant. This "mark," when first seen, presented the appearance of a little dot, in the center of which could be detected a minute orifice. On the second day after birth the midwife noticed that a little albuminous fluid oozed from the orifice. There was no redness or evidence of inflammation about this little opening. When I examined the child I found a distinct fistulous orifice at a point about one quarter of an inch above the right sterno-clavicular articulation and on a line with the anterior margin of the sterno-mastoid muscle. The neighborhood of the fistula appeared soft, pliable, and free from inflammatory hardness; nevertheless, by pressing and pinching up the skin around the fistula, a considerable amount, about ten or twenty drops, of a thick, ropy puruloid fluid, was made to exude from the opening. By insinuating a slender probe into the orifice, a tract leading to a sinus nearly two inches in depth was readily discovered. The

[1] Communicated, with presentation of patients and specimens, to the Orleans Parish Medical Society.

tract was obliquely directed upward and inward, under the sterno-mastoid muscle, and toward the pharynx, when further progress appeared to be arrested by a *cul de sac*. There was some sensitiveness, possibly pain, aroused by the exploration, as the child would cry when the probe was introduced, though no manifestations of great distress or of a reflex character were elicited. The injection of milk with a small syringe was attempted, but this only distended the tract, and was immediately returned after the withdrawal of the syringe. The orifice of the fistula was carefully watched while the child suckled, and as no milk was seen to escape through it, I concluded that it did not communicate with the pharynx.

The fistula was the only visible or recognizable abnormality presented by this infant; in fact, it was an unusually healthy, robust, and well-formed baby. The parents of the child are both Americans, of English-Irish extraction; the father is a mechanic, aged thirty-four years; the mother is thirty years of age. Both are in excellent health, and know nothing of any condition similar to this in their respective families. The mother has given birth to other healthy children, and cannot account for her baby's condition by any hereditary influence.

From the congenital existence of the fistula, its situation just above the right sterno-clavicular articulation, and along the line of the sterno-mastoid muscle, it was plain that this fistula was a relic of embryonal life, and, to be more specific, a teratoid evidence of imperfect closure of the fourth branchial cleft, or, probably, better, of the *precervical sinus*. (His.)

While congenital fistulæ in this situation are not altogether rare, they nevertheless possess a peculiar attraction to the thoughtful physician because their pathogeny is so intimately connected with the earliest developmental facts of embryonal existence, and their presence recalls a period in human ontogeny

which is of critical importance, and when any disturbance or accidental interference with the normal evolution of the embryo is likely to be followed by the most disastrous consequences. This consideration alone encourages me to believe that a few remarks on this and other illustrations of teratoid anomaly will be of sufficient interest to justify their presentation.

Though we are told by G. Fisher[1] that as early as 1789 Hunkowski published two observations on congenital fistula of the neck, it is nevertheless true that a knowledge of the true nature of the condition has not been vulgarized in the profession until the last fifteen years. And yet the correct interpretation of some of the types of this condition is still a matter of discussion among the ablest teratologists. It is admitted by all writers that Dzondi,[2] in 1829, first seriously attracted the attention of the profession to the subject, describing it as "congenital tracheal fistulæ." This designation proves clearly that Dzondi had fallen into a serious error in regard to the true nature of these congenital tracts, but Ascherson[3] (1832) soon demonstrated that they had nothing to do with the larynx, but rather, when the fistulæ were complete, that they implicated the pharynx. The latter author attempted to explain their mode of formation by the embryologic data

[1] "Historische Notiz zur Angeborenen Halsfistel, Deutsche Zeitschrift für Chirurgie, 1873, Bd. ii, p. 150; also in "Die Krankheiten des Halses," Deutsche Chirurgie von Billroth und Lücke, Stuttgart, 1880, B. xxxiv.

[2] Dzondi: "De Fistulis Tracheæ Congenitis" (Halæ, 1829), quoted by Fisher, loc. cit.

[3] Ascherson: "De Fistulis Colli Congenitis," Berlin, 1832.

furnished by the investigations of Rathke, Husche, Von Baer, and Burdach, on the branchial arches.

Following closely upon Ascherson's original paper other observations and contributions appeared in Germany, from Luschka, Roser and Heusinger, and in France, from P. Broca, Faucon, S. Duplay, Sarrazin and Cusset. So much work had been done in this direction that Heusinger, in 1864, had collected 46 cases; Cusset, in 1877, over 70; Fisher, in 1880, had gathered 100; and finally, in 1890, Konstanecki and Mielecki were able to base their most recent and complete study upon a total of 125 observations.[1] This last memoir is based upon the most recent embryologic researches of His, Köl-liker, Fol, Rabl, etc., on the normal development of the neck. Though still more recent, and equally important from the critical standpoint, are the chapters in the unfinished *Traité des Affections Congenitales*, by Professor Lannelongue, vol. i, 1891, and the erudite article by A. Broca, in the *Traité de Chirurgie* (Duplay-Reclus), vol. v, 1891, to both of which I am greatly indebted for my references.

We know but very little of the causes that lead to congenital fistulæ of the neck. The most salient point in the etiology thus far obtained lies in the fréquency of heredity as an etiologic factor. Fischer was able to associate hereditary influence in 21 cases among 232 observations. Hereditary influence may manifest itself through several generations, as shown in Ascherson's observations, in

[1] K. Konstanecki und A. Mielecki: "Die Angebornen Kiemen Fisteln des Menschen," Arch. für path. Anat. und Physiologie, 1890, Bd. cxx, p. 385, etc.

which eight individuals of the same family were affected with branchial fistulæ in the course of three generations.

Though this condition is the result of a developmental vice of the branchial apparatus or of the precervical sinus (in cases of infra-hyoid fistulæ), it is a notable fact that it is rarely associated with other malformations, though concomitant deformity of the external ear has been noted by Heusinger, and of the middle or internal ear, by Virchow. While sex does not appear to exercise any determining influence, it is nevertheless true that in the latest statistics of Konstanecki and Mielecki, a certain predominance of the male sex is noticeable.

Branchial fistulæ may appear in three different ways. (1) They may be complete, connecting the external integument with the pharyngeal cavity; (2) they may appear as blind external sinuses opening upon the cutaneous surface; and (3) they may be blind internal sinuses, diverticula or *cul de sacs* opening only into the pharynx. This last form, according to Lannelongue, is of doubtful existence. The incomplete external fistula is by far the most frequent. Thus of 75 fistulæ, 52 were of this class, 18 were complete, and 5 were internal. The seat of the external or cutaneous orifice is variable, but it is far more common along the anterior border of the sterno-mastoid and in the infra-hyoid region than elsewhere.

Topographically, congenital fistulæ may be classified as follows (Lannelongue):

1. Fistulæ opening into the concha of the ear.

2. Fistulæ opening into the supra-hyoid region, which is common to the four branchial clefts.

3. Fistulæ opening in the infra-hyoid region, *a*, median; *b*, lateral.

The internal opening of the complete fistulæ is almost invariably recognized in the tonsillar region and at the base of the tongue. This internal orifice is usually very small, easily escapes the eye, and can only be demonstrated by injecting the external orifice with milk or some coloring-substance. But Heusinger reports a case in which the orifice was large enough to admit the little finger, and in another instance reported by Mayr it was associated with diverticula or pockets in which food accumulated.

In the case herein reported, exploration has been attempted by the probe, and injection of the external orifice, with the result of demonstrating the incompleteness of the fistula.

In some cases the escape of the ingesta furnishes excellent proof of their completeness. Thus a patient of Heusinger's would frequently notice fragments of bread with water or other fluids escaping through the cutaneous orifice, while at meals; in other cases, such as those related by Santi and Meinet, "a few drops of milk would escape out of the external orifice while the child nursed."

As a rule, the external orifice of the fistula is the seat of a serous or mucoid exudation which resembles saliva (on this account is mistaken sometimes for a salivary fistula), and the resemblance being more pronounced in some cases because this secretion appears to be increased during mastication.

In the majority of cases these fistulæ cause but little inconvenience beyond the discharge of the characteristic secretion. Sometimes the external orifice becomes red, sore, and inflamed, and especially so with some women during the menstrual period. (Maury's case.)

Dysphagia and other disagreeable symptoms have been noticed in many cases but, as a rule, congenital fistula is a very bearable complaint, rarely, if ever, giving rise to dangerous symptoms.

The pathogeny of these fistulæ is probably their most interesting feature. In considering their mode of formation we must revert to the primitive branchial state. We should remember that the first branchial arch originates at the base of the skull in the sphenoidal region and forms the maxillæ. The second branchial arch, known also as the stylo-hyoid arch, serves as the groundwork for the hyoid apparatus, constituted above by the styloid process, which is attached to the temporal, lower down to the stylo-hyoid ligament and terminates below in the lesser cornua of the hyoid bone. The third branchial arch issues from the temporal region of the skull, and terminates below in the great cornua of the hyoid. Finally, the fourth arch, which is situated behind the preceding, begins above, just behind the third arch, and descends into the neck to form the soft parts of the anterior cervical region, including the larynx and trachea.

"The first branchial cleft,[1] which lies between the

[1] Or, better, pouch, as the later researches of His, Born, Kölliker, Piersol, and others, have demonstrated that no open clefts really exist between the branchial arches.

first, or maxillary, and the stylo-hyoid arch, does not disappear completely in extra-uterine life. A portion of the auditory canal, formed by the Eustachian tube, the tympanic cavity, and the external auditory canal, remain as permanent vestiges of its existence. The second and third clefts lie very closely together throughout their whole length. For this reason it is difficult to say to which of the first three clefts the fistula belongs. The fourth cleft follows a direction which is clearly indicated by the anterior margin of the sterno-mastoid muscle. The upper half of this furrow lies very near to the third cleft, but its lower half is quite separate and distinct from the upper level of the thyroid cartilage to the manubrium sterni. The fistulæ, therefore, which open along the lower half of the anterior border of the sterno-mastoid are attributable to defective closure of the fourth branchial *cleft.*

This explanation of the origin of these fistulous tracts, especially those of the auricular and lateral supra-hyoid region, has been admitted with practical unanimity as a classical teaching until very recent years; and in fact, an observer so competent and authoritative as Lannelongue (*Maladies Congenitales*, 1891) still regards this theory as the one that best explains their presence, though he admits as plausible the more recent explanation given by His and Rabl. According to these observers and their followers, these embryonal vestiges should be accounted for by an imperfect closure of the *sinus præcervicalis* (His) or the cervical canal of Rabl—a deep anfractuous furrow that is found at the base of the neck, at the end of the branchial period. It

is formed by the junction of the ectodermic surface of the branchial arches with the thoracic integuments—the thymus gland appearing at its deep and lower extremity. Any anomaly in the development of this sinus, or even of the thymus itself, would readily explain the persistence of these congenital fistulæ or cysts in this region of the neck. Lannelongue insists, however, that this theory would account for the lower incomplete or blind fistulæ, but that the complete fistula is explicable only by an imperfect closure of a branchial cleft.

There is a great deal to be said in favor and against both the older and the more recent views, especially when we consider the almost constant position of the internal orifice in complete fistulæ, notwithstanding the most variable position of the external opening, but we cannot stop to discuss the embryologic aspect of the question in all its details, and we must proceed with other considerations.

II. CHONDROMATOUS FORMATION ASSOCIATED WITH INCOMPLETE CONGENITAL CERVICAL FISTULA OF THE THIRD OR FOURTH CLEFT.

One of the most interesting features of these branchial fistulæ is that which refers to the presence of solid cartilaginous or osseous masses that are found attached to the walls of these tracts or along the line of the branchial arches.

In a case reported by Heusinger, he observed a lamella of bone fully three centimeters in breadth at its base, and twenty-eight millimeters in length. Heusinger, Duplay, and Manz have recognized

similar osteo-cartilaginous masses in the region of the branchial arches in persons who had no fistulæ.

It was by rare chance that I met with a case that evidently owed its peculiarities to the same pathology.

The patient, a male, laborer, German, aged twenty-four years, was admitted into my service in ward 8, out-clinic, Charity Hospital (in the summer of 1891), for the removal of an inflamed dermoid of the right supra-orbital region. While examining the man I noticed a small chondroid mass situated near the right sterno-mastoid at its anterior margin, about three inches below the mastoid, nearly opposite the thyroid cartilage. The mass had an elongated fusiform shape, and measured about one inch and a half in length. It was very hard and painless; while apparently movable it had ill-defined but deep attachments; it was situated below the deep fascia, and was partially adherent to the sheath of the muscle. About one quarter of an inch below the lower extremity of the mass there was a small depression that contained a very minute opening, so fine that only the bristle of a hypodermatic needle could be insinuated into it for a very short distance. The patient said that he had always had this lump, even from earliest childhood, but as it had never bothered him he had allowed it to remain without disturbance. He also stated that the little opening would occasionally discharge a whitish-looking fluid, but this occurred so rarely that he did not pay any attention to it. He knew but very little of his family history excepting that his parents were healthy and living in Germany. One brother was living, but he was not aware of any abnormality in his case. I suggested the removal of the chondroma and fistula, but he insisted that the removal of the dermoid was enough and that he would come later for the treatment of the cervical growth. But he failed to do so, or at least he did not return again during my term of service.

In this case I believe the diagnosis was congenital chondroma, with associated fistula, of branchial origin, which I would easily have overlooked had it not been

that the presence of the dermoid made me think of congenital abnormalities.

Now, what interpretation must be given to these congenital hard growths? Should they be regarded as rudimentary branchial arches or visceral ribs, following Heusinger's expression, which are developed here in consequence of a defective evolution of the branchial arches?

A rational answer can only be obtained from the data of comparative anatomy and embryology.

Lannelongue, who is deeply learned in these matters, says:

"We know that in the vertebrata that breathe through a permanent branchial system (gills), each permanent branchial arch is provided with a cartilaginous framework which is modeled very much like the ribs of the same vertebrate. Each and all of the vertebræ of fishes, from the caudal extremity to the head, give attachment to ribs. In this class there is no distinct neck. The branchial ribs are continuous above with the cranial ribs and below with the thoracic set. On the other hand, the mammifera are free from cervical ribs, or rather the cervical ribs are reduced to the condition of mere osseous appendages without any definite function, and are united to the bodies of the vertebræ.

"The branchial arches, which are distinct in the embryonal period, become fused later on, and their skeletal frame persists only in a very rudimentary manner. We do not refer to the skeleton of the first branchial arch, which resolves itself into the maxillæ (they are true cranial ribs). But the completely developed branchial ribs, which persist in fishes, are reduced in man, in the case of the second and third arches, to the suspensory apparatus of the stylo-hyoid ligament and os hyoides.

"The fourth branchial arch is entirely deprived of all osseous elements in man, except in the median portion, where the larynx and trachea are formed at its expense.

Outside of these respiratory organs, there is no osseous structure to indicate the situation of the fourth branchial pouch in the normal human adult."

Therefore, the skeleton of the branchial arches is very much developed in the facial arch; is rudimentary in the second and third arches, which leave as relics isolated bony and cartilaginous formations, viz., the stylo-hyoid apparatus; and, finally disappear almost *in toto* in the region of the fourth arch. It is true, nevertheless, that the third and fourth branchial arches of the embryo possess rows of cartilages which are analogous to the cartilages of Meckel and Reichert (of the first and second arches). We can readily understand, therefore, that in many instances these primitive cartilaginous formations, instead of becoming atrophied and disappearing, as occurs normally, may, under some disturbing developmental factor remain and develop into the peculiar chondroid and osseous formations that have been herein described.

III. CASES OF CONGENITAL PRE-AURICULAR CHONDRO-FIBROMATA OR AURICULAR APPENDICES.

Apropos of the cartilaginous formations along the lines of the branchial arches and pouches previously described, I have the opportunity of exhibing to the Society a typical specimen of the more common variety of *pre-auricular symmetric* fibro-chondroma, which I removed three weeks ago from the pre-auricular region of a young Jewish gentleman (aged twenty-two years), who thought it a simple "wart," and wanted it removed for purely esthetic reasons. The accompanying photograph gives a

pretty clear idea of the appearance of the tumor before its removal. My client had originally two such growths at birth, one in front of each ear (both auricles being perfectly proportioned and well formed), but one was snipped off by a physician some years ago, who also called the growth "a

FIG. 1.

A typical congenital pre-auricular fibro-chondroma, or so-called supernumerary auricle; symmetrical. (Author's case.)

wart," and did not appear to pay much attention to it. These curious growths may be classed with the group of embryonal malformations which are directly traceable to a vicious or teratoid development of the branchial apparatus. The appearance of these little tumors is very characteristic, and when once seen they are not easily forgotten or mistaken for anything like a wart. They appear usually

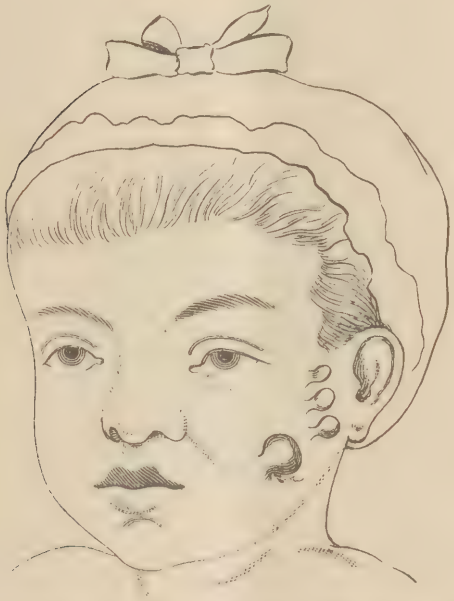
as smooth, slender, elongated, and conoid or club-shaped masses, which usually project rigidly from the skin and measure about three-fourths of an inch in length in adults. They are usually thicker at the free end than at the attached portion, which is narrow and constricted. By palpation a distinct rod of cartilage can be felt imbedded in the mass, and by further exploration it is found connected with the cartilage of the ear. This cartilaginous rod is not always present, especially when the tumor is found in the region of the fronto-nasal plate. These growths are always covered with a skin of perfectly normal appearance.

The congenital appendices here referred to are usually situated, as in the case reported, in the pre-auricular region, near the tragus, with which they are usually connected by a cartilaginous plate; then, much less frequently they are found in the line leading from the tragus to the commissure of the mouth, and more rarely still they are found along the whole of the median line of the face on the bridge of the nose; again, they have been found springing from the mucous membrane of the lower lip (see Fig. 3) and also in the neck on the anterior sterno-mastoid line along the region of the fourth branchial cleft.

Congenital fibro-chondromata may be single or multiple. There may be one, two or three growths at one of the usual points of election. Generally they are single in the middle external surface of the cheek or on the anterior sterno-mastoid line. They are frequently multiple in the pre-auricular region.

In addition they have a tendency to appear symmetrically on the two sides of the face or neck.

FIG. 2.

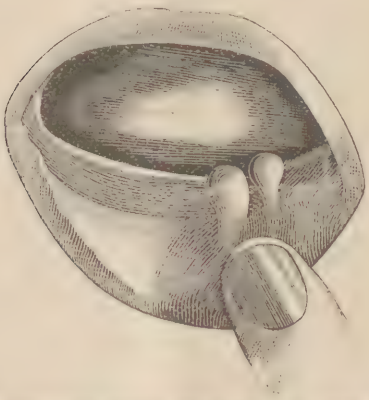


Three congenital fibro-chondromatous appendices in the pre-auricular region associated with another pedunculated fibro-chondroma of the cheek, in the line of the intermaxillary clefts. Author's case. Sketch after LANNELONGUE, Obstet., lxxvii; Maladies Congenitales, vol. i, p. 563.)

This multiple symmetric tendency was well shown in the case of a little boy, aged two years, whom I chanced to see in the streets while paying a visit to a patient in the neighborhood. The child presented an entirely

normal appearance, with the exception of the presence of three little tumors on each side of the face in the pre-auricular region ; there was also another growth on the cheek which was less rigid and more pedunculated than the others. The parents were very poor, and did not appear to be troubled by the condition of the child in the least. I noticed that the mother had several small fibro-lipomatous masses about the face ; two on the bridge of the nose and one on a level with the exter-

FIG. 3.



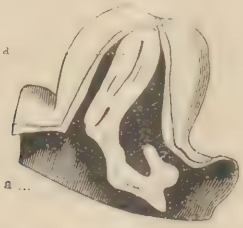
Congenital fibro-chondromata, projecting from lower lip into the mouth. (After LANNELONGUE.)

nal canthus of the left eye, all of which were apparently congenital. I made a memorandum of the case, intending to return soon to have photographs of both the mother and the child, but the people had moved out of the neighborhood, and I have never heard from them since. The child's appearance was so strikingly like that represented by Lannelongue on page 563 of his *Maladies Congenitales*, vol. i, that I have reproduced that figure with slight modifications, as it will give an exact idea of the situation of the growths in my case.

In my case there was no associated congenital coloboma nor a kerato-conjunctival dermoid, as in Lannelongue's little patient, but the three pre auricular appendices and the growth on the cheek, on a line with the inter-maxillary cleft, were almost identical.

The exact pathogenesis of these growths is still obscure. They have been studied by Sue, Reismann, Rynd, Morgan, Southam, Van Duyse, but particularly by Lannelongue,[1] by Poirier, and

FIG. 4.



Section of a congenital fibro-chondroma of the neck. a..a. Cartilaginous, club shaped rod at center of tumor. [The pre-auricular varieties are connected with an irregularly-shaped flat plate of cartilage, which serves as a basis or pedestal for the cartilaginous rod.] (Modified after LANNELONGUE, Affections Congenitales, vol. i, p. 544.)

Retterer (*Bull. Société Anatomique*, 1880, *Journal de l'Anatomie*, 1890–91; by J. Bland Sutton ("On Branchial Fistulæ, Cysts, Diverticula, and Supernumerary Auricles," *Journal of Anatomy and Physiology*, 1887, vol. xxi, p. 289); also by A. Broca

[1] Lannelongue et Achard, Traité des Kystes congenitaux, Paris, 1886. Lannelongue et Menard, Maladies congenitales, vol. i, 1891.

(*Bull. de la Société Anat.*, 1889, and an article in Duplay et Reclus, *Traité de Chirurgie*, 1891, vol. v.)

In view of the varieties that have been described it is possible that all are not ascribable to the same pathogeny, though the bulk of evidence is emphatically in favor of their purely branchial origin.

Bland Sutton, for instance, has with characteristic ingenuity and ability availed himself of the researches of His on the development of the pinna to explain the existence of the pre-auricular variety of these "supernumerary auricles" (as he calls them, with other English writers), on the theory of an aberrant or independent development of a primary auricular tubercle, which has been detached from or has failed to fuse with the general mass of the pinna.

"When supernumerary auricles appear in the neck they are to be regarded as outgrowths from the margins of the branchials, repeating the conditions normally existing in the two anterior arches instead of being suppressed." The same author in his delightful lectures on "Evolution in Pathology," (*Lancet*, February 18, 1888) confirms the original observation of Heusinger who had noticed that the pendulous "tags" which are frequently observed in the necks of goats and other animals are analogous to the "supernumerary auricles" found in man, and interestingly shows also that the existence of these appendages had not escaped the attention of the ancient sculptors, who in some of their statues of fawns and satyrs reproduced not only the "tags" of the lower animals, but also the

fibro-chondromatous appendices of the neck, as they are seen in man.

Sutton's theory, plausible as it may appear, is not altogether satisfactory, for it does not account for those cases in which these appendices appear in their most typical form in the pre-auricular region of individuals with *perfectly formed ears.* If these were always due to a defective development of the pinna we could understand that the growth has been formed by a detached tubercle, but this not being the case we must seek for another explanation.

At one time Lannelongue, Trelat, and Magitot had thought that the pre-auricular varieties could be accounted for by a vicious budding of Meckel's tubercle, but this opinion has been abandoned by Lannelongue, who, after a careful analysis of all the evidence, now holds "that these congenital fibro-chondromatous appendices of the neck, as well as of the face, originate in an abnormal budding of the branchial arches on a level with the clefts which separate them at a certain period of embryonal life."

The arguments in favor of this view are forcibly presented by this distinguished observer, but I could not appropriately present them here. I will, therefore, forego their discussion. I shall only briefly repeat what has been noted by others, that congenital fibro-chondromata are frequently associated with other teratoid manifestations, viz., macrostoma, auricular malformations, atrophy of the inferior maxillary, which have been observed by Rynd, Morgan, Van Duyse, Trelat, and others. (Broca.) Lannelongue has been particularly struck by the

influence of heredity in their production. Van Duyse has insisted upon the importance of amniotic adhesion as a causative factor, but judging from my limited experience and the observations of others it would appear that this association is rather an accidental and exceptional circumstance than a constant factor in the pathogeny.

As to the treatment of these types of congenital abnormalities that are here presented, little need be said except that extirpation is the indication whenever it is practicable. An incomplete fistula may be completely removed by dissection, even in very young children, but the traumatism involved in the extirpation of the more complete variety with a pharyngeal aperture is too great to inflict on infants and even young children. This field of surgery is still comparatively unexplored, and to my knowledge there is but one recorded case of successful extirpation of a *complete* branchial fistula. This is the case of E. Tricomi.[1]

The patient in this case was a woman, aged twenty-four years, who had a complete fistula, the external orifice of which was situated in the right anterior sternomastoid line, 2½ centimeters above the right sternoclavicular articulation, 2 centimeters to the right of the median line, and 8 centimeters below the angle of the lower jaw. The external opening of the fistula measured 2 millimeters in diameter and allowed a probe to penetrate a distance of 10 centimeters in depth. A colored liquid was injected through the lower orifice, and it was discharged into the pharynx, behind the right tonsil, through the internal orifice. Deglutition was effected

[1] E. Tricomi: Un caso di fistola congenita completa dell collo (fistola branchiale), La Riforma Medica, p. 541, August 28, 1891.

normally, but the act of swallowing was accompanied by a tugging sensation and severe headache. An incision was made which extended from the external opening to the angle of the jaw on a guide furnished by the probe in the fistulous canal. The whole tract was exposed and readily detached from the neighboring parts to which it was but slightly adherent, and the upper part was dissected out with the help of the finger introduced into the pharynx. The pharyngeal opening was then closed by suture. The result was a complete success.[1]

Irritant injections have been carefully tried. Weinlechner (quoted by E. Albert, Vienna) has thoroughly tested iodin, and has convinced himself of its absolute worthlessness.

It should always be remembered that any procedure that would close only the *external* orifice of a complete fistula would simply create a pharyngeal diverticulum wherein food-stuffs and secretions would accumulate with disastrous results, so that the extirpation of a complete fistula should not be undertaken unless it is formally contemplated to remove the whole tract.

While the operative treatment of congenital fistulæ may become a very serious matter, it is otherwise with the treatment of the congenital fibro-chondromata which can be easily, quickly, and painlessly removed under cocain-anesthesia. It is well to remember their deep cartilaginous connections, especially in the pre-auricular variety, in order that a proper cosmetic effect may be obtained.

---

[1] Other cases of successful extirpation of congenital fistulæ have been reported; for instance, that of G. Cavazzarri (Riforma Medica, Oct. 7, 1891), and the later cases of Schlange (Verhand. der Deutsche Gesellschaft für Chirurgie, xxii, Kongress, 1893); but I am not certain that they were ***complete*** fistulæ.